OIPE JC10 MAR 12 2004 PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Peter S. Whitney et al.		
Serial No:	10/021,765	Group:	2874
Filed:	December 12, 2001	Examiner:	Lin, Tina M.
For:	MEMS Tunable Optical Filter System with Moisture Getter for Frequency Stability	Confirmation No:	2239

Date: March 9, 2004

APPELLANTS' BRIEF

Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450,
Alexandria, Virginia 22313-1450

Sir:

This is the Applicants' appeal from the final Office Action, mailed October 9, 2003 (Paper No. 5).

Real Party of Interest

Axsun Technologies, Inc. is the real party in interest.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-11 are pending in this application. Claims 1-11 stand finally rejected pursuant to the outstanding Office Action.

Status of Amendments

No amendments have been presented. There were no post final amendments or proposed amendments.

Summary of the Invention

The invention features an optical filter system. The system comprises a package 12 and an optical filter 22, which is installed within the package.

03/15/2004 SFELEKE1 00000150 501547 10021765
01 FC:2402 165.00 DA

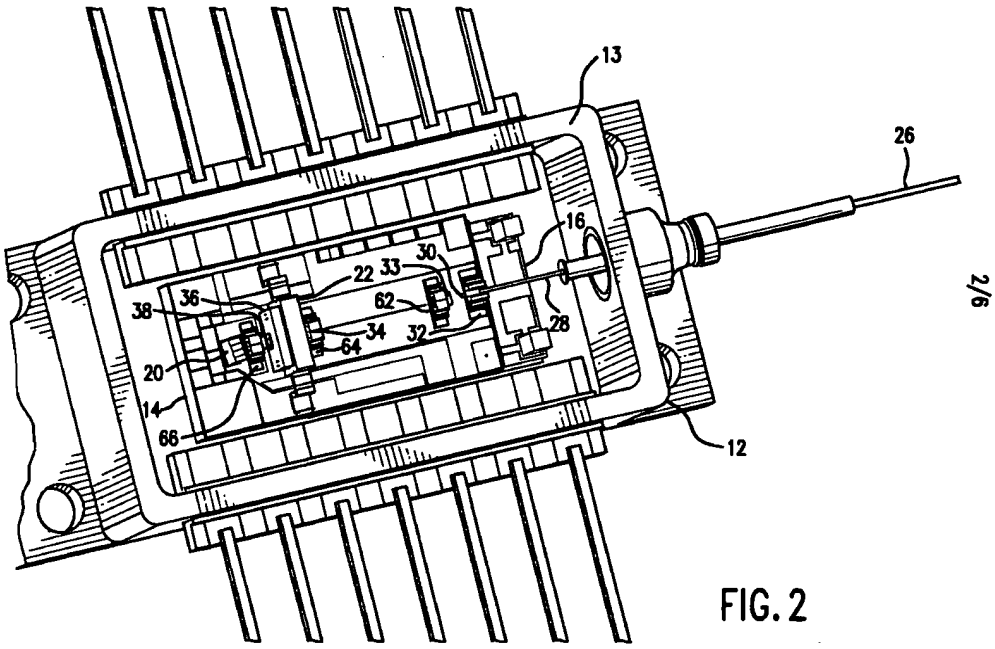


FIG. 2

In one example, this filter has at least two thin film, dielectric mirrors, which define an optical resonant cavity. According to the invention, a getter is added to the package to absorb moisture, and thereby stabilize the operation of the optical filter 22, and specifically prevent uncontrolled drift in the size of its optical cavity.

In one example, the getter 2 is added to the package's lid 1 as shown below:

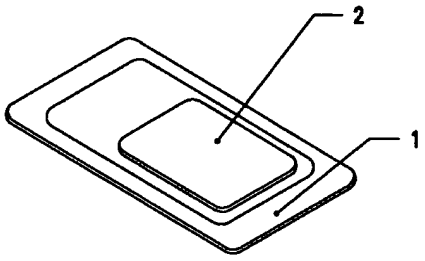


FIG. 4

Issues

1. Whether claims 1-5 and 8-11 are unpatentable over U.S. Patent Application Publication US2002/0064352A1 to Andersen et al.

2. Whether claims 6 and 7 are unpatentable over U.S. Patent Application Publication US2002/0064352A1 to Andersen, *et al.* as applied to claim 1 and further in view of U.S. Patent 6,373,602 B1 to Wang.

Grouping of Claims

Claims 1-11 stand or fall separately from each other.

Argument

The present claimed invention is directed to the inclusion of a getter in the optical filter package. Claim 1, for example, is directed to an optical filter system, comprising a package, a thin-film optical filter, and a getter in the package that absorbs moisture to stabilize the optical filter. In a similar vein, claim 8 is directed to a process for packaging an optical filter, comprising installing a thin film optical filter in a package, placing a getter in the package, and sealing the package with the optical filter and the getter inside.

The value of this getter became apparent to the inventors in volume manufacturing the optical spectrum analyzer of "Fig. 2", included hereinabove. Typically, the optical spectrum analyzer was subject to spectral shifts or drift over time that affected its frequency accuracy. The nature of these spectral shifts was, at one point, not known. Research by the inventors led them to conclude that it was associated with the material stress of the thin film mirrors of the MEMS filter. Changes in material stress associated with moisture in the hermetic package led to frequency shifts in the filter.

As shown in Figs. 6A and 6B, of the instant application, the inclusion of the getter improved the stability of the system against frequency drift.

This problem is neither appreciated by the applied art, nor is a solution suggested. Therefore, one skilled in the art, based on the applied references, would not find it obvious to include a getter as claimed. Certainly, it was not obvious to the inventors. Months of research and study were required to isolate the moisture as the source for at least some of the frequency drift.

In more detail, the Anderson application at page 3, first paragraph suggests the inclusion of a moisture wicking agent, in a planar optical component package. The innovation of the present invention, however, is the use of getter to stabilize thin film optical filter.

The Anderson application neither shows nor suggests that a getter should be included in a thin film filter package. The Office Action argues at the center of pages 2 and 3 that the pipette/parallelogram-shaped components in Fig. 4 of the Anderson patent are well-known and common shapes for resonant cavities. Applicants respectfully disagree. Parallelograms, generally, cannot be used as resonant cavities because of beam walk-off. It is not clear how a pipette could ever be used as a resonant cavity. In short, Applicants respectfully urge that the argument of obviousness is not technically sound.

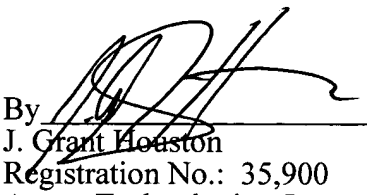
Relative to claim 3, the Anderson patent does not show or suggest the use of a getter to stabilize a tunable filter. Anderson does not mention tunable filters.

Relative to claim 4, the Anderson patent does not show or suggest the use of a membrane release structure. Anderson does not mention release structures.

Relative to claim 5, the Anderson patent does not show or suggest the use of a getter to stabilize material stress to thereby stabilize resonant cavity dimensions. The use of Anderson's wicking agent appears to be related to dust control, see Anderson, paragraph [0025].

For the foregoing reasons, Applicants believe that the pending rejections should be withdrawn, and that the present application should be passed to issue. Should any questions arise, please contact the undersigned.

Respectfully submitted,



By _____
J. Grant Houston
Registration No.: 35,900
Axsun Technologies, Inc.
Tel.: 978-439-3479
Fax: 978-262-0035

Billerica, MA 01821
Date: March 9, 2004

Appendix

1. (original) An optical filter system, comprising
 a package;
 an optical filter installed within the package having at least two thin film mirrors that define an optical resonant cavity; and
 a getter in the package that absorbs moisture to stabilize the optical filter.

2. (original) A tunable optical filter system as claimed in claim 1, wherein the package is a hermetic package.

3. (original) A tunable optical filter system as claimed in claim 1, wherein the optical filter is a tunable filter in which at least one of the thin film mirrors is disposed on a release structure.

4. (original) A tunable optical filter system as claimed in claim 3, wherein the release structure is a membrane.

5. (original) A tunable optical filter system as claimed in claim 1, wherein the getter absorbs moisture in the package to stabilize a material stress in the thin film mirrors and thereby stabilize dimensions of the optical resonant cavity.

6. (original) A tunable optical filter system as claimed in claim 1, wherein the thin film mirrors comprise alternating layers including tantalum pentoxide.

7. (original) A tunable optical filter system as claimed in claim 1, wherein the thin film mirrors comprise alternating layers including tantalum pentoxide and silicon dioxide.

8. (original) A process for packaging an optical filter, comprising
 installing an optical filter comprising at least two thin film mirrors, which define an optical resonant cavity, in a package;
 placing a getter in the package to absorb moisture in the package during operation;

sealing the package with the optical filter and the getter inside.

9. (original) A process as claimed in claim 8, further comprising drying the inside of the package to remove moisture prior to the sealing step.

10. (original) A process as claimed in claim 8,wherein the step of sealing the package comprises sealing a lid onto the package.

11. (original) A process as claimed in claim 8, further comprising applying the getter to the lid prior.

OIPE JC16 MAR 12 2004 PATENT & TRADEMARK OFFICE

Image AF/2874

PTO/SB/21 (03-08)
Approved for use through 04/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/021,765
Filing Date	December 12, 2001
First Named Inventor	Peter S. Whitney
Art Unit	2874
Examiner Name	Lin, Tina M.
Total Number of Pages in This Submission: 24	Attorney Docket Number: 1109us

ENCLOSURES (*Check all that apply*)

- [✔] Fee Transmittal Form
 - [] Fee Attached
- [] Amendment/Reply
 - [] After Final
 - [] Affidavits/declaration(s)
- [] Extension of Time Request
- [] Express Abandonment Request
- [] Information Disclosure Statement
- [] Certified Copy of Priority Document(s)
- [] Response to Missing Parts/ Incomplete Application
 - [] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [] Drawing(s)
- [] Licensing-related Papers
- [] Petition
- [] Petition to Convert to a Provisional Application
- [] Power of Attorney, Revocation Change of Correspondence Address
- [] Terminal Disclaimer
- [] Request for Refund
- [] CD, Number of CD(s) _____
- [] After Allowance Communication to a Technology Center (TC)
- [] Appeal Communication to Board of Appeals and Interferences
- [✔] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [] Proprietary Information
- [] Status Letter
- [] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual	J. Grant Houston
Signature	
Date	March 9, 2004

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: March 9, 2004

Typed or printed	Deborah Celeste		
Signature		Date	March 9, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, Washington, DC 20231.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

OIPE JC10 3517 MAR 12 2004 PATENT & TRADEMARK OFFICE

PTO/SB/17 (10-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 165.00

Complete if Known	
Application Number	10/021,765
Filing Date	December 12, 2001
First Named Inventor	Peter S. Whitney
Examiner Name	Lin, Tina M.
Art Unit	2874
Attorney Docket No.	1109us

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 501547

Deposit Account Name: AXSUN Technologies, Inc.

The Director is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims	11	-20** =	0	X	0	=	0
Independent Claims	2	- 3** =	0	X	0	=	0
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	165.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 165.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	J. Grant Houston	*Registration No. (Attorney/Agent)*	35,900	*Telephone*	978-439-3479
Signature				*Date*	March 9, 2004

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.